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MINERAL INVESTMENT AND ITS EFFECTS ON DEVELOPMENT

Report on a meeting of management experts held under the OECD Labour/Management Programme (Paris, 18 November 1998)

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FOREWORD

Under the OECD Labour/Management Programme for 1998, a meeting of management experts on "Mineral investment and its effects on development" was held in Paris on 18th November 1998. The meeting was prepared in collaboration with the Business and Industry Advisory Committee to the OECD (BIAC).

Below you will find the Agenda and the Discussion Paper of the meeting, as well as the overall report prepared by Professor Anil Markandya, designated as General Rapporteur for this activity.

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AGENDA

General Introduction.

Session 1: The Effects of Foreign Investment on Local Development: the Case of Mining and Minerals.

This session will begin with a brief presentation of the BIAC Raw Materials Committee research proposal on this subject. Participants will then hear an overview of the work which has already been done on this subject, i.e., Bath University, World Bank, UNCTAD; and identify the key policy issues requiring further research.

Session 2: Review of Country Experiences with Mineral/Mining Investment.

Speakers during this session will present and discuss country-specific experiences, comparing the positive contribution which Mineral/Mining Investment has made in some countries with the less successful cases in others. How has the domestic policy framework contributed to the results in each case?

Session 3: The Multilateral Policy Framework.

The discussion during this session will consider what possible role multilateral institutions and agreements might have in encouraging better development results from foreign investment in the mineral/mining sector. For example, could/should a framework be used to promote local development objectives? How can/should multilateral lending institutions assist in this regard?

Session 4: Future Work.

Drawing upon the day's discussion, this session will seek to define the priorities for further research and the possible role to be played by the OECD.

Summary of the results of the meeting by the rapporteur.

Concluding remarks.

DISCUSSION PAPER

by
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1. INTRODUCTION

The contribution of the mineral sector to the economies of some developed countries, such as Australia, Canada and the United States has been significant for a long time. Among developing countries, Algeria, Brazil, Bolivia, Chile, China, India, Indonesia, Jamaica, Mexico, Papua New Guinea, Namibia, Peru, South Africa, Zambia and Zimbabwe have large mineral sectors. In addition, the transition countries of Bulgaria, Czechoslovakia, Poland and Yugoslavia and the member states of the former USSR have significant mineral sectors. An analysis of the production of 9 minerals (aluminium, cadmium, copper, lead, mercury, nickel, tin, zinc and iron ore) over the last 24 years for which data are available (1973-1996) shows a number of conflicting trends. In developed countries, production has decreased very slowly for 7 of the 9 minerals and increased for the other two (aluminium and cadmium). In developing countries, however, production has increased for all but one of the minerals, in some cases by significant rates (for cadmium, zinc, copper, iron ore and aluminium). In the transition countries, the economic difficulties have caused declines in all but two of the commodities (copper and nickel).

As a part of the national economy, mineral production has grown in importance in some countries and declined in others. Developing countries in which declines in share of GDP for minerals have been recorded since between 1973 and 1995 include Bolivia, Jamaica, South Africa and Zambia. Countries where there has been an increase include Brazil, Chile and China and Peru. Finally among the developed countries, Australia and Canada show a slight increase and the USA showed a slight decline.

This overall picture shows few marked changes in trends in the minerals sector over the last quarter of a century. However, it masks a number of important developments, for which there is less systematic evidence. First, is the substantial increase in the level of foreign direct investment (FDI) in the mining sector in developing countries. Capital expenditures on mining alone are estimated at \$20,000 million for the period 1995-2000 (Mining Journal, 1996)¹. The main reasons for this are economic liberalisation and

1. It should be noted that while mineralogical potential remains the principal determinant of the location of new investment, the wide range of un-exploited deposits and mineral properties now potentially available for investors means that economic liberalisation and associated policies on investment, taxation, and profit

privatisation. Since 1989 over 75 developing countries have liberalised the regulations relating to foreign direct investment (FDI). (Warhurst and Bridge, 1997a). At the same time many state owned operations have been privatised, creating a demand for private sector investment. This has raised questions about the impacts and benefits of such investment, at the national as well as the local level, and in economic as well as social and environmental terms.

Second, there is a growing concern with the social and environmental impacts of mineral development. At the social level, the effects on health and the social cohesion and cultural integrity of local communities is particularly of interest. On the environmental front, new or expanded operations have additional effects; some of which can now be routinely managed, such as acid rock drainage, and some of which present technological challenges like biodiversity conservation and efficiency in waster use. Others relate to increased risk of accidents, for example from tailings dam failures. The regulations governing these operations, and the establishment of voluntary codes of practice are important areas of debate.

Presented below are some of the key points, which should be addressed in the minerals development debate. They are divided into those that relate to the national development goals, and those that concern local communities, respectively the macro and microeconomic aspects of the minerals-development debate. The paper also provides an indication of the research questions that arise and deserve further study.

2. MINERAL INVESTMENT AND THE MACROECONOMY

There are two issues at the macroeconomic level that need to be addressed. First is the link between resource abundance, economic performance and policy, and second there is the relationship between mineral exploitation and sustainable development.

There has been a growing literature on the links between natural resource dependence and overall economic development, with a number of papers showing that there is an inverse association between a country's dependence on mineral wealth, and its economic growth. Auty (1997) divided countries into resource rich and resource poor and into large and small. The economic growth performance of these countries between 1960 and 1990 is given in Table 1². Resource rich countries did better than resource poor ones by a margin of 2.4 percent annual growth (large countries) and 1.7 percent annual growth (small countries). Research on this question has been ongoing for some time and a number of factors have been identified as possible explanations. Three are 'external' and three are 'internal' (Ranis, 1991). Among the external factors, first there is the so-called 'Dutch Disease', whereby exports of minerals result in a rise in the exchange rate and reduced competitiveness of other sectors of the economy. Second, mineral export prices experience more volatility than do those of manufactured goods, causing collapses in growth when the economy is over-dependent on these products for its exports. Third, mineral-based economies are ones with the income from the mineral exploitation very unequally distributed, with the result that there is social and political instability.

expropriation, in addition to the environment and community consultation, have a significant role in determining where investment is made (Warhurst and Hughes, 1998a).

2. Definition of resource rich is based on land, but in effect all major mining countries are included in the resource rich category. A country is small if it has a GDP of less than \$7billion in 1970 prices.

Table 1: Economic Growth in Resource Poor and Resource Rich Countries

Resource Endowment	No of Countries	% <i>per capita</i> GDP Growth (1960-1990)
Resource Poor		
Large	7	3.5
Small	13	2.5
Resource Rich		
Large	10	1.1
Small	16	0.8

Source (Auty, 1997)

The internal factors all involve the mismanagement of the net income, or 'rent' from natural resource exploitation. First these rents are used to support import substitution policies, long after their contribution to development has ceased to be positive. Second the rents distract governments from investing in human resources, which is a powerful source of endogenous growth. Third, the presence of rents inhibits governments developing wealth creation policies since they are able to 'live off these rents'. It should also be noted that historically these resource rents have rarely been re-invested in improving the efficiency of production of the mining sector or in developing further reserves through exploration. The history of mining in Bolivia illustrates this well (Jordan and Warhurst, 1992). There is also the issue of corruption regarding the appropriate use of resource rents, eg. Bolivia, Tajikistan and Nigeria.

Research on the relative importance of these factors is ongoing (Gelb et al, 1991, Sachs and Warner, 1995a, 1997, Lane and Tornell, 1996). The Harvard Institute for International Development is embarking on a research project in this area, with the collaboration of UNCTAD, and the UN University WIDER Programme has initiated a series of country studies on Environmental, Export and Human Development Problems in Natural Resource Based Growth Models.

Further policy questions that arise from this work relate to:

- (a) How the poorer performance of resource rich countries arises from, or is exacerbated by, policies that the governments introduce, and
- (b) How can these policy failures be corrected.

The policy links that have been identified include:

- (a) The use of protectionist policies in resource rich countries to protect the domestic non-resource sector,
- (b) Excessive public subsidies when there are rents available from the mineral sector, which can be used for this purpose,
- (c) Creation of unproductive jobs in the public sector to absorb the urban unemployed.

The ongoing research referred to above will make address many of these questions but there is scope for a more detailed analysis of the political economy of this area. No one can seriously expect resource rich countries not to exploit their mineral assets where there is an international demand for them. One can, however, look at rules by which the misuse of the rents from that exploitation are minimised, and mechanisms by which these rules can be implemented. This is not a core part of the agenda of the

research community, although this has been addressed partially for the Asian and Central Asian Republics (Naito et al 1998, Clark 1998).

The proper use of the rents from resource exploitation is closely related to the other dimension of the macroeconomic link – that between mineral exploitation and sustainable development. Models of sustainable development have shown the importance of investing the rents from mineral exploitation, so that future generations are not left with an asset base that is smaller than the one the present generation had (World Bank, 1997). This literature has built on the contributions of Solow (1974) and Hartwick (1977). More detailed and generalised rules linking investment of resource rents to sustainable development can be found in e.g. Vincent, Panayotou and Hartwick (1997) and Asheim (1997).

A number of countries that rely heavily on natural resources for the livelihoods of their citizens do in fact have investment funds that are designed to do precisely that. This is true of most of the oil-rich gulf states, of Norway, and of some developing countries. In the case of the latter, however, short term crises often mean that the funds are raided and not replenished. An example is Jamaica, which had established such a fund for part of the export earnings from bauxite mining. In the macroeconomic crises of the 1970s, however, the fund was effectively used up and then dissolved (Reed, 1997). The conflict in both these cases here is clearly between the short and long term goals. The policy challenge is to devise mechanisms that commit nations to long term investment goals, from which there is no withdrawal when short-term macroeconomic imbalances arise.

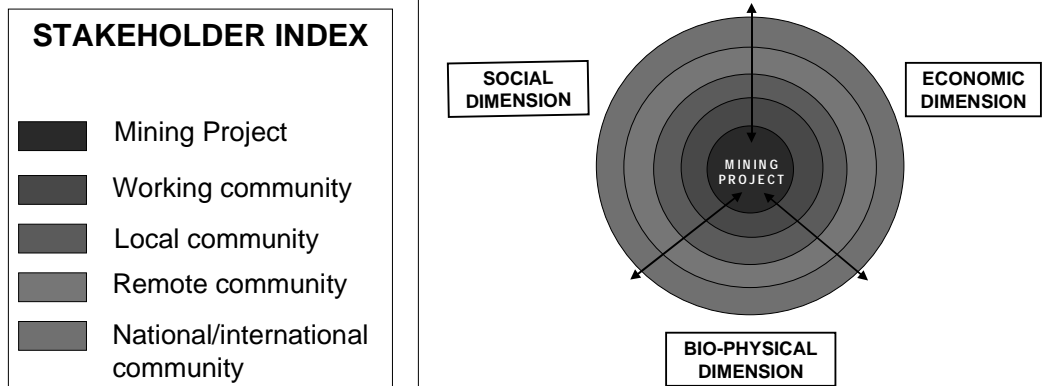
3. MINERAL INVESTMENT AND MICROECONOMIC GOALS

The following linkages between mineral investment and the microeconomic goals are considered below:

- (a) Impacts of changes in mining practices on the natural environment,
- (b) Impacts of changes in mining practices on communities, and
- (c) Rules to ensure equity and efficiency for all investments (domestic and foreign) in the minerals sector.

The effects of production activities on sustainable development can be categorised within three spheres: **economic**, **social** and **bio-physical** (see Figure 1). This model builds on research (Warhurst, 1998), which suggests that effects of mining on social development should not be considered independently of the effects of production within the bio-physical and economic spheres. Interactions between industry, for example, and communities do not occur in isolation but affect one another, with both the bio-physical and economic effects having the potential to cause indirect social impacts. This points to the need for multidisciplinary research that considers them together, respecting their links. In Figure 1, the mining project can be considered the ‘input’ and the development impacts on affected stakeholders are ‘outputs’. Research suggests that these social impacts are both positive and negative, and numerous and varied with the capacity to either substantially enhance or diminish the economic and social development profiles of stakeholders.

FIGURE 1



Warhurst, 1998, adapted from Mergler, 1997

3.1 *Impacts of Mining Practices on the Natural Environment*

Recent evidence shows that environmental damages from mineral sector activities have been reduced significantly in the last decade or so. The major contribution in this regard has come from cleaner technology, with end-of-pipe removal of wastes having played smaller part. (Warhurst, 1994a, UNEP, 1997). This is attributed partly to the liberalisation of investment, which facilitated increased foreign direct investment, and partly to the stricter standards imposed by international financing institutions, on both domestic and foreign investors in the minerals sector (Warhurst and Hughes, 1998b).

The key issues that arise in this regard are:

- (a) Indicators of environmental performance and their use in environmental regulation and the conditions attached to project finance,
- (b) The role of state or international regulations versus voluntary codes in setting standards, and
- (c) The role of market based instruments to provide the right incentives.

Indicators of environmental performance

In order to implement any regulatory policy it is essential that governments, **and other stakeholders**, have access to relevant and robust measures of environmental performance. Work in this area for the minerals sector has been ongoing at the Mining and Environment Research Network (MERN), based at the University of Bath. Indicators have been developed under a number of different classifications. The project adopts a stakeholder approach to indicators so that they are meaningful in different contexts. It builds on OECD 'pressure', 'state', 'response' concepts (OECD, 1993) and the WHOQAL indicators of human well-being (Szabo, 1996). In addition, it will cover the following:

- (a) Technological indicators, which measure the performance of a particular process or operation (usually in terms of emissions of waste) relative to some guide of best practice for that process or operations.
- (b) 'Cost Effectiveness' indicators, which measure the cost incurred per unit reduction of impact. An example would be the cost that the enterprise incurs, per statistical death avoided as a result of its operations.
- (c) Sustainability indicators, which measure, relative to best practice:
 - The extent to which a plant recovers material in all stages of its operations,
 - Total energy use per unit of output, and
 - The percentage of energy coming from renewable sources,
 - Damages caused from the operations, in physical or monetary terms. Such measures can form the basis of market based instruments (see below).

Work in this area is proceeding but is still in its early stages. The level of interest shown by the governments and international institutions, however, is encouraging and suggests that it could be of great practical relevance.

The role of state or international regulations versus voluntary codes in setting standards

There is much discussion about the methods of regulating the environmental impacts of industrial enterprises. Technological standards, such as Best Available Techniques (BAT) are used in the EU³, or Best Available Techniques Not Entailing Excessive Cost (BATNEEC), which are used in the UK. In both cases an integrated pollution control approach is being taken, so that emissions from all sources are looked at. The system works through permits for particular operations. Most importantly, however, the Directive stipulates that authorities should not prescribe particular technologies for particular activities. Rather, they should set conditions and emission values on the basis of what is considered achievable by BAT and then give enterprises the freedom to meet these in the way that they choose. It is intended that this approach will encourage innovation and provide the optimum solution for the environment (EC, 1997). The BAT principle applies to new enterprises. Existing enterprises will be phased in to BAT over time.

Other public environmental regulations include requirements on rehabilitation, environmental liability and on compensatory investments when new mineral sources are developed. The justification for all these is clearly the protection of the environment but it is important to ensure that countries obtain the best 'value for money'. The present system of regulation does not pay enough attention to looking at the benefits of the regulations relative to the costs, or to ensuring that the measures are cost effective. As proper indicators are developed, their use for this purpose will be an important area of research.

The use of public regulations for environmental goals has high administrative and financial costs. In many developing countries regulations that are excellent on paper are not implemented, due to lack of trained professionals and resources. To counter this, multilateral development banks are supporting developing countries through, for example, capacity building and environmental training for regulators and financiers (eg World Bank, EBRD). The effectiveness of this intervention will require systematic monitoring and comparative evaluation (Warhurst and Hughes, 1998c).

3. ... 'Best Available Techniques' signifies the latest stage in the development of activities, processes and their method of operation which indicate the practical suitability of particular techniques as the basis of emissions limit values for preventing or, where that is not practicable, minimising emissions to the environment as a whole, without predetermining any specific technology or other techniques.

In such cases, voluntary compliance also warrants analysis, especially in situations where civil groups monitor environmental performance and put pressure on the enterprises to comply (Greenpeace, Friends of the Earth, Community Aid Abroad, United Church, Minerals Policy Institute etc). The success of recent programmes such as Grasberg in Irian Jaya, Indonesia, and Ok Tedi in Papua New Guinea (Warhurst et al 1998) are examples of how this can work. In Europe, the development of covenants between industry and the regulator act as a means of ensuring ultimate compliance; if the voluntary agreement does not deliver, the threat of regulation is included in the terms of the covenant.

In such cases voluntary compliance has much to be said for it, especially where civil groups can monitor environmental performance and put pressure on the enterprises to comply. The success of recent programmes such as the one in Indonesia are examples of how this can work. In Europe, the covenants between industry and the regulator act as a means of ensuring ultimate compliance; if the voluntary agreement does not deliver, the threat of regulation is included in the terms of the covenant.

As a result of increased competitive pressures and environmental concerns, **financial institutions** are rising to environmental challenges (Warhurst and Hughes, 1998c). Over 90 international **banks** now undertake **environmental financial risk assessment** of their borrowers and half of these banks incorporate **environmental liability** into loan terms and monitor environmental risks (Vaughan 1995).

The fear of **environmental liability** has also driven companies to adopt **cleaner technologies** and better management techniques. Furthermore, evidence on the relationship between environmental and economic performance has generally supported the finding that poorer environmental performance translates into poorer economic performance (Johnson, 1995). Also encouraging were the findings of Hart and Ahuja (1996), using data from the **EPA's Toxic Release Inventory**. They concluded that there was a positive relationship between pollution prevention and financial performance.

The rise in environmental awareness has also manifested itself in the form of ethical investing. Managers of ethical funds can help to promote environmental awareness through disclosure and transparency. A collaborative, on-going study of institutional investors suggests that sustainable development is of mainstream importance and that companies are increasingly, having to behave according to the new values of society⁴.

The increasing demands of the financial sector in terms of environmental and social impact assessments have pushed forward the environmental imperative particularly for industries such as mining where resource depletion, and pollution risks are high. Other issues for **research** include:

- Environmental management systems and strategies as pre-conditions for loans
- Environmental bonds
- Debt for nature swaps

Research is needed to identify financial drivers of environmental and social performance by considering which mechanisms offer the potential for enhancing a company's environmental performance, for example, the attachment of environmental conditions to the provision of credit, equity investment and social and political risk insurance.

4. The survey is being undertaken by Noranda Inc. in collaboration with CICA, Deloitte & Touche, Ernst & Young and NRTEE. The full results will be published in December 1998. To date, 58% of the respondents are European with 35% and 7% from North and South America respectively.

Research is also needed to consider the extent to which financial conditionality enhances the regulatory and monitoring capacity of developing countries within a sustainable economy and how improved collaboration between various stakeholders might best be achieved.

There has also been a growth in research on life cycle assessment (Berkhout, 1996; Berkhout and Howes, 1996) and the broad rise of cradle to grave analysis prompting companies to scrutinise either their entire or at least the most proximate parts of their supply chain. Increasingly, all subsidiary contributors to a consumer-end product will need to meet similar standards of environmental quality and social equity. The 'greening of supply chains' will also have upstream effects that will increasingly demand environmental responsibility, in some cases verified through demonstrated accreditation to environmental management system standards, by raw material suppliers right from the supply of quarry and mine products. In this context, the changing supplier/user interface is also an important area requiring further research.

Thus measures to protect the environment are initiated from a number of sources. An integrated evaluation of how they impact on the ambient environment, and on the relative efficiency of different regulations mechanisms and financial conditionality is, however, missing. This is something future research can and should address.

The role of market based instruments to provide the right incentives

There is a substantial literature that shows the benefits of using market-based instruments to regulate the environment. Product and emissions charges and tradable permits have become increasingly popular over recent years, not only in the OECD, but also in developing countries. By offering enterprises the choice of how much to reduce emissions, society can achieve a given environmental standard at a lower cost than would be the case if it imposed strict technology or emissions limits. The use of such instruments for the control of sulphur, nitrous oxide and carbon dioxide emission, for BOD in water and for solid waste has been, or is being introduced in several countries (OECD, 1997a, b, ADB, 1997). For the minerals sector, however, the application has been much less. Some countries, as noted above, use performance bonds to ensure ultimate rehabilitation of mining sites, but apart from that market-based instruments are little used in the minerals sector⁵. There is scope to increase that use, to provide incentives to enhance the management of tailings and overburden disposal. In addition to the incentive to improve environmental performance, such charges can provide funds, which can be used for environmental improvement. An example here is the pollution tax imposed on coal mining in the US (RCRA) which pays for clean-up of disused coal mines (Tilton, 1994). There has also been some discussion about a mercury tax in Brazil and a cyanide tax in the USA. Technical issues relating to the geochemistry of mineral deposits, however, have made implementation problematic.

In view of the above, research on the scope and proper design of market-based instruments is an item that should be on the research agenda.

5. The exceptions are applications to refineries and smelters, where market based instruments are now being introduced in the United States.

3.2 Impacts of changes in mining practices on communities

A growing area of public concern, matched by increasing corporate responses, is the impact of minerals development on local communities. A major conference was held on this theme in Quito in 1997 (McMahon, 1998). The principal objectives were (a) to diagnose the issues and (b) to propose practical approaches and solutions building on the experiences of mining companies, government, NGO and community groups. This conference highlighted some of the major issues that need to be addressed by systematic empirical research on mining and community issues. These are: legal and consultative processes; economic benefits and costs; social benefits and cost and management practices and the community. A useful set of case studies of corporate best practice in this area covers international operations that illustrate key issues such as building commitment; education and training; employment enhancement; local business development and community relations (Sloan et al, 1995). In addition, there are a number of ongoing research projects at the University of Bath that cover Social Impact Assessment in Mining, Participation and Local Community Development, Social Performance Indicators and the Ethics and Corporate Social Responsibility.

While these projects highlight important new areas of research, there are a range of issues that require further work, such as:

- (a) Methodologies for stakeholder mapping,
- (b) Analysis of the effectiveness of legislative innovations, such as requirements of prior consultation with affected indigenous communities (See the recent proposals under Colombian Law),
- (c) The relative cost and benefits of mineral development projects for women and children,
- (d) The indirect effects of large mineral development projects with regard to backward linkages and small-scale local industry including small scale gold mining,
- (e) The labour effects accompanying the 'down-sizing' of large scale state-owned production. Most new investment is capital-intensive and the welfare-providing role of the old nationalised industries has been streamlined, often without compensatory measures being introduced by the state due to the strictures of structural programmes.

3.3 Efficiency and Equity in Mineral Investment

As noted earlier, foreign investment in the mineral sector has increased significantly in recent years. This could bring important development benefits to the countries receiving the investment, **subject to safeguards for the environment and appropriate policies to ensure that the benefits are fairly spread**. These caveats have been discussed in the previous sections. This section deals with measures to ensure that such investment is fair both to the investor and to the receiving country.

A key issue of importance is standards on investment for foreign and domestic firms in the minerals sector. Foreign investors generally abide by higher environment and social performance standards than are mandated in the country. However, some argue that the regulations that apply to them should be no more strict than those applying to domestic investors (the so-called 'National Treatment' rule). They also demand that the country not discriminate between foreign investors in terms of conditions of investment (the so-called 'Most Favoured Nation Treatment rule'). Both seem reasonable and indeed form the basis of the proposed Multilateral Agreement on Investment (MAI), being negotiated through the OECD. The MAI also contains a number of other clauses, such as transparency of laws regulations and procedures, imposition of special performance targets on foreign investors and procedures for dispute resolution.

Apart from its equity aspects, the MAI offers a mechanism for attracting foreign investment, as such investors receive a strong policy signal from the government. At the same time, some developing countries have expressed reservations against the MAI, arguing that it could be detrimental to their interests. A full stakeholder analysis of the agreement has not been carried out. Were it to be undertaken it could help in finding mechanisms for resolving the disagreements about the MAI, possibly by designing pathways by which developing countries could achieve full accession to the agreement.

The other concern of developing countries, which is indirectly related to the MAI, is that of externally imposed performance standards preventing local enterprises from effectively competing in the mineral sector. If financial institutions make their lending contingent on standards adopted in the developed world, and the terms of such lending apply to local enterprises, then the small and medium sized sector may not be able to enter the industry. That could have significant employment and income effects. The same applies to trade standards for products, such as ISO14000. This set of standards is being developed with both developed and developing country participation, but the bias is in favour of the former. With standards that are designed to meet the needs and interests of developed countries, the developing countries may pay too high a price for the development of their mineral sector.

The research issue here is to evaluate the effects of existing lending and trade labelling requirements on the domestic industry in developing countries, and to see what measures, if any, need to be taken to ensure that such rules are fair to all parties.

4. CONCLUSIONS

This paper has reviewed the issues arising from mineral investment, especially as it relates to developing countries. It has identified a number of research topics that should be followed up. These can be summarised as follows:

4.1 Macroeconomic Issues

- An analysis of the mechanisms by which the misuse of the rents from mineral exploitation takes place, and policies by which such misuse can be minimised.
- Devising mechanisms that commit nations to using part of the resource rents to meeting long term investment goals, from which there is no withdrawal when short-term macroeconomic imbalances arise.

4.2 Microeconomic Issues

- The present system of regulation does not pay enough attention to looking at the benefits of the regulations relative to the costs, or to ensuring that the measures are cost effective. As proper indicators are developed, work needs to be done their use in policy formulation.
- Thus measures to protect the environment are initiated from a number of sources - public regulation, financial institutions and industry associations. An integrated evaluation of how they impact on the ambient environment, and on the relative efficiency of the different regulations is, however, missing.

- Research is needed to identify the financial drivers of economic and social performance, and the extent to which financial conditionality has an effect on regulatory and monitoring capacity.
- The changing relationship between suppliers of inputs (including the various stages of the mining cycle) and the end-users of consumer products needs to be further studied.
- There is scope to increase the use of MBIs, to provide incentives and financial resources, perhaps through charges on tailings and overburden disposal. Hence research on the scope and proper design of market-based instruments is an item that should be on the research agenda.
- On the social impacts of mineral development, there is a need to develop methodologies for stakeholder mapping.
- An analysis of the effectiveness of legislative innovations requiring consultation with affected communities should be carried out.
- An analysis of the distribution of the costs and benefits of mineral development, focusing particularly on women and children is required from the experience of several countries.
- The impacts of large mineral development with regard to backward linkages and small scale local industry effects, including small scale gold mining need to be assessed.
- The labour market effects of the downsizing of large scale state owned production facilities need to be analysed further.

4.3 *Investment Rules*

- A full stakeholder analysis of the MAI has not been carried out. Were it to be undertaken it could help in finding mechanisms for resolving the disagreements about the MAI, possibly by designing pathways by which developing countries could achieve full accession to the agreement.
- There is a need to evaluate the effects of existing lending and trade labelling requirements on the domestic industry in developing countries, and to see what measures, if any, need to be taken to ensure that such rules are fair to all parties.

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FINAL REPORT ON THE MEETING

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BACKGROUND

1. The objective of the meeting was to bring together policy and industry experts in the minerals sector, to further understanding of the relationship between resource investment and optimum economic and social development. Thirty-one persons attended the meeting, of whom 16 were from the mining industry, two from the Business and Industry Advisory committee secretariat (BIAC), two from the research community, three from multilateral development organisations and the rest (10) from the OECD secretariat. A full list of participants is attached as an Annex to this report.
2. The meeting was chaired, and opened by Gary Nash, Secretary General of the International Council on Metals and the Environment (ICME) and Chairman of the BIAC Raw Materials Committee. He was followed in the introductory session by Mr. Jean-Roger Bonvin, President of the OECD Development Centre and by one of the authors of the issues paper prepared for the meeting, Anil Markandya.
3. These introductory sessions noted the importance of mineral investment and production in developing countries, and the growing importance attached by many governments to the contribution of the mineral sector to economic development. This investment is significantly, though not exclusively, financed by OECD countries.
4. At the same time, there is a growing concern about the environmental, social and cultural implications of mining investment, and whether the sector is contributing to the goals of sustainable development to the maximum extent that it could. The issues paper prepared by Anil Markandya and Alyson Warhurst echoed these themes, as did the proposal to the OECD for work in this area, prepared by BIAC. Both these documents had classified the questions to be addressed under the headings of 'micro' and 'macro', and under the topics of economic, social and environmental. Thus there was a two-way classification of the issues, under which most of the discussion could be categorised.

OVERVIEW OF THE ISSUES

5. The presentations in the morning sessions were by Alyson Warhurst of Bath University, Gary McMahon of the World Bank and Olle Ostensson of UNCTAD. They focussed on the micro issues and made a number of key points.

- i. There was substantial difference between different operations within the mining sector, and consequently between the impacts they had in economic, social and environmental terms. These varied according to the site, the age of operation, the country where the activity was being carried out, and the institutions funding the activity.
 - ii. Following on from that, the analysis of the contribution of mining to sustainable development had to be carried out at the project level; generalisations at the country, or even enterprise level, were often misleading.
 - iii. There was a need for more accurate information about the performance of projects with respect to their economic, social and environmental impacts. Alyson Warhurst presented some work on environmental and social performance indicators in these areas ongoing at Bath University.
 - iv. To be successful in fulfilling the expectations of local stakeholders mining enterprises were expected to do more than comply with the relevant regulations; they had to be proactive and to take a community based participatory approach to their activities. This meant anticipating problems from the outset and not invoking crises management to deal, retrospectively, with the problems.
 - v. The trend fall in the real price of minerals, as well as the advances in mining technology have resulted in substantial changes with respect to the level and skill mix of employment created and to the linkages with the local economy. The idea of a mining operation as creating a small sub-economy, or 'enclave', is no longer applicable. The changes in these linkages and the employment needs of the sector have created new challenges that need to be addressed.
 - vi. It has long been known that there are complex issues arising from the sharing of the rents from mining operations between the private sector, different levels of government and the local community. The relative effectiveness of different mechanisms for sharing these rents has not, however, been studied as thoroughly as it deserves to be. Some governments take the revenues centrally and then redistribute them. Others have an agreed formula for direct taxation of the revenues by local and central government, and some earmark a share of the rent for specified uses. There are arguments in favour of each of these options as well as arguments against them. Empirical evidence to evaluate success, under changing conditions of these different methods, however, is very limited.
6. In the following four sessions, representatives of the mining sector in different countries made presentations. These were (in order of presentation): Dick Wells from the Minerals Council of Australia, Isabel Marshall, from Ananconda Chile, Jose Luis Lee from Càmara Minera de Mexico, and John Stewart from the Chamber of Mines of South Africa. The speakers covered the same range of issues, but their focus was somewhat different from that of the earlier group. They addressed the contribution of the mineral sector to the **economic performance** of the countries in which the industries were located and the economic benefits to the citizens of those countries. The main points made in this regard were the following:
- i. All speakers stressed the contribution of the sector in terms of direct and indirect employment, foreign exchange earnings, local community services, urban growth and provision of infrastructure. The reported economic performance, however, was judged to be inadequate, resulting in the sector not being judged fairly compared to other sectors.
 - ii. The fact that the industry is becoming more capital intensive and that price of the output has been falling has reduced employment opportunities, which have occasionally resulted in a gulf between community expectations and what the mining companies have been able to provide.

iii. The conditions for attracting investment in the mineral sector that investors considered most important were identified, in order of priority as: security of tenure on the rights acquired by the investor; ability to repatriate profits; consistency and constancy of minerals policies in all areas, including terms of exploration, tax liability; and environmental obligations.

iv. On the environmental side, the most effective approach was seen as one of partnership between industry and government. Voluntary agreements to meet standards, about which the industry was often better informed than the regulator, provided cost-effective and efficient methods of achieving compliance. In general foreign investors were considered to operate to high environmental standards, but evaluations of their performance were often adversely affected as a result of the damage caused by small operators who were working to much lower standards.

v. There was some discussion about the 'Dutch Disease' – a phenomenon whereby some mineral rich countries have suffered from an overvalued exchange rate and mismanagement of their public budget. The general view taken was that, whatever the merits of the arguments in an historical context, the research should focus on ways in which such countries can be, and in several cases, have been successful in the pursuit of stable growth. The presentation by Isabel Marshall made a convincing case for how this could be done by looking at the experience of Chile.

vi. There was considerable discussion about the distribution of rents from mining operations. It was recognised that measuring how and where they ultimately ended up was not easy. As in the earlier discussion, tax rules and the treatment of deductibility of payments for social obligations, were seen as important factors. There was a difference of opinion as to whether a system, which earmarked rents for local development was an appropriate way to proceed, or whether it was better to do it through the tax system. In the latter case the level of decentralisation of taxes varies greatly. Knowledge about the actual effectiveness of different systems is poor, which suggests another area requiring research.

7. The third part of the conference was devoted to the work of UNEP in the area of technology transfer, information exchange and capacity building, and of the OECD in the promotion of the multilateral framework on investment. The UNEP presentation by Andrew Parsons referred to the Mineral Resources Forum, a web site with data on studies relating to the minerals sector. It was important that people carrying out research in this area post it in this database. In the area of capacity building, UNEP was involved in programmes on the use of voluntary industry codes, life cycle analysis and financial accounting for the costs and benefits of mining projects. There was also an initiative under way to establish an agreement under which commercial financial institutions would not fund projects that did not meet environmental standards laid down by the World Bank.
8. Joachim Karl described the OECD negotiations on a Multilateral Agreement on Investment (MAI) that began in September 1995, and came recently to a halt. The intention of the agreement is to promote foreign investment and thereby to contribute to economic and social development. The core principle was non-discrimination with respect to market access and post-establishment treatment. Provisions were envisaged for the protection of investment against expropriation, and for the free transfer of capital. The MAI also addressed issues of labour rights, environmental protection and investment boycotts. Furthermore, the draft MAI included provisions for an effective dispute settlement mechanism. Although negotiations are no longer taking place, OECD Member states remain committed to the goal of establishing a multilateral framework on investment. Discussions continue on how this goal can best be achieved and on the role to be played by the OECD.

POSSIBLE AREAS FOR FUTURE RESEARCH

9. Suggested research areas are described below. These sections report on the discussion during the workshop⁶. The first point that emerged is the existence of a large 'grey' literature on the impacts of different programmes of community involvement, of the local benefits of mining operations, etc. On a couple of occasions during the meeting, participants from World Bank and UNCTAD referred to a lack of studies in the areas of mining development and local community welfare, and on the linkages between mining and other sectors of the local/regional economy. In both cases, however, it emerged that some studies had been conducted by mining companies or mining associations. It is clear, therefore, that there is a need for an annotated database, which covers both, published as well as 'grey' – i.e. unpublished literature in these important areas. The existence of the UNEP web site could be of help, as will the initiative launched by IDRC on mining in the Americas⁷. What is needed, however, is a systematic documentation of the data, including a preliminary screening of the material. As part of the process of collecting such data, screening and disseminating it, a series of workshops could be held.
10. The remaining research issues can be classified into those relating to data collection and documentation, and those relating to data analysis. On the data analysis the need for information about the performance of a particular operation with regard to the local and national impacts and with regard to the economic, social and environmental effects has already been noted. Much of the ongoing work, however, has been on the social and environmental impacts of mining; more is needed on the economic impacts. Research on the indicators should allow for a comparison across countries, over time, and across industries. This requires a research effort that is sensitive to differences of national data. The comparisons across industries will also involve looking at other sectors of the economy and developing measures of: contribution to employment (direct and indirect), local development, provision of infrastructure, net earnings of foreign exchange, etc. Indicators that measure the efficiency of resource rent distribution from specific mining projects would make an important contribution to policy formulation for the minerals sector. Work in this general area is probably best initiated by the OECD, which offers excellent professional support, not only in economics but also in the other areas that are relevant to the proposed programme.
11. In addition to the work described above, the work on environmental and social indicators is by no means complete. It is still at the early research stage. As it develops, it will have to move to the level where indicators can be published on a regular basis by an authoritative body. Progress to that stage is part of the recommended research agenda.
12. In terms of data analysis the general feeling was for case studies to be undertaken to understand better what has been happening in the industry over the past decade. The following studies were proposed:
 - i. The impacts of liberalisation on mining investment world-wide has been significant. The OECD should consider reviewing these impacts through a case study of the mining sector.
 - ii. A second case study should look at the contribution of mining to economic development. The comparative analysis should document where success has been achieved, where there has been

6. It should be noted that the workshop did not reach a formal consensus on which components of the research programme described should be pursued and how they should be pursued.

7. This refers to The Minerals Policy Research Initiative directed from the IDRC office in Montevideo.

a lack of success and the reasons for these. Such research should compare mining with other manufacturing sectors, such as textiles, furniture, etc. Liberalisation should look primarily at changes in rules for FDI, but also at related areas where deregulation has been implemented.

- iii. A comparative analysis of different methods of rent distribution and their relative effectiveness.
 - iv. The determinants of success or failure in the contribution of mining operations at the local level⁸.
 - v. Implications of changes in mining technology (with the exploitation of larger, lower cost deposits using more capital intensive methods); in ownership patterns following privatisation and increases in joint ventures; and of the prices of minerals (long term downward trend), on local employment policy, retraining and sustainable local development in general.
13. The outcome of this research should be a guide to best practice in the sector. Of course, this will be a complex document, covering a wide range of issues. Much of what constitutes best practice for public policy and corporate strategy will be determined by conditions that are specific to the country and locality. But the conference did conclude that there are some general principles to be drawn out, and some guidance on what works best and under what circumstances is urgently needed.
 14. It was further suggested by Alyson Warhurst that an important starting point could be a series of six biannual meetings that would develop a progressive research agenda, along the lines suggested above, and that would produce briefing notes for industry/policy-makers, as well as detailed proceedings. This was welcomed as a way of bringing together diverse areas of research.
 15. A research programme of this kind would necessarily involve several groups and would have to be interdisciplinary. As stated above, the co-ordination of the programme, however, and the dissemination of the results would most appropriately be undertaken by an organisation such as the OECD. In this regard David O'Connor relayed the willingness of the OECD to undertake such a role and to review the possible research topics. He stated, however, that there were no funds available at the present time for the OECD to actually carry out the research.
 16. The meeting concluded with the Chair, Gary Nash, stating that the suggestions for further research raised during the day were a valuable contribution for consideration by individual participants and that he looked forward to hearing whether any of them would be pursued further.

8. This might build on research at the University of Bath on indicators of human health and well-being.

ANNEX -- LIST OF PARTICIPANTS

MANAGEMENT EXPERTS

Mr. Richard C. Wells	Executive Director Minerals Council of Australia	AUSTRALIA
Mr. Patrick Van Den Bossche	Environmental Consultant Fabrimetal ASBL	BELGIUM
Dr. Joao Sergio Marinho Nunes	President of the Board of Directors Instituto Brasileiro de Mineracao (IBRAM)	BRAZIL
Mr. Gordon Peeling	Mining Association of Canada	CANADA
Ms. Isabel Marshall	Anaconda Chile	CHILE
Mr. Alain Dangeard	Président-Directeur Général MEED SA	FRANCE
Mr. Ernst-Ullrich Krische	German Association for International Mining	GERMANY
Mr. José Luis Lee Moreno	Camara Minera de Mexico	MEXICO
Dr. John M. Stewart	Chamber of Mines of South Africa	SOUTH AFRICA
Mr. Knut Sörensen	International Affairs Manager KLAB	SWEDEN
Dr. David S.C. Humphreys	Chief Economist The Rio Tinto Zinc Corporation Ltd.	UNITED KINGDOM
Ms. Moya Phelleps	Vice-President, International Trade National Mining Association	UNITED STATES
Ms. Corinna Hebestreit	Director European Association of Mining Industries	
Mr. Gary Nash	Chairman of the meeting Secretary General International Council on Metals and the Environment (ICME)	

Ms. Anita Roper International Council on Metals and the Environment (ICME)

Mr. Claude Lecoq Secretary General
International Nickel Study Group

BUSINESS AND INDUSTRY ADVISORY COMMITTEE TO THE OECD (BIAC)

Mrs. Hanni Rosenbaum Manager

Mrs. April Tash Manager

OTHER EXPERTS

Professor Alyson Warhurst Director, International Centre for the Environment UNITED KINGDOM
Director, Mining and Environment
Research Network
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Dr. Andrew Parsons Associate Programme Officer: Mining
UNEP Industry and Environment

Mr. Olle Ostensson United Nations Conference on Trade and
Development (UNCTAD)

Mr. Gary McMahon World Bank

RAPPORTEUR

Professor Anil Markandya Professor of Economics and Head of UNITED KINGDOM
Department, School of Social Sciences
University of Bath

OECD SECRETARIAT

Development Centre

Mr. Jean-Roger Bonvin President

Mr. David O'Connor Principal Administrator, Social Problems Division

Environment Directorate

Mr. Krzysztof Michalak Administrator, Co-operation with European economies in transition and non-member countries

Directorate for Financial, Fiscal and Enterprise Affairs

Mr. Joachim Karl Principal Administrator
Capital Movements, International Investment and Services
Division

Directorate for Science, Technology and Industry

Mr. Graham Vickery Principal Administrator, Industry Division

Public Affairs and Communications Directorate

Mr. Denis Lamb Head of the Public Affairs Division

Ms. Gráinne Tiffonnet Assistant, Public Affairs Division